

D&D Subgroup Highlights

February 10, 1998

This meeting was held in the Assembly Room of the Bechtel Building. This was a special meeting focused on highlighting technologies being tested and used by each Hanford contractor for decontamination work.

BHI Decontamination Technologies/Work

Steve Pulsford distributed copies of three technology demonstration fact sheets that describe technologies used at C-Reactor and how they compare to the baseline technologies. Each of these three technologies was used to decontaminate concrete at C-Reactor.

The first technology examined was the concrete floor shaver made by Marcris Industries to free release the concrete floors. The shaver can remove concrete to a depth of $\frac{1}{16}$ -inch to $\frac{1}{4}$ -inch at a rate of 2-3ft² per minute. This is done using multiple diamond impregnated cutting blades on a vacuum machine device that also has a HEPA dust suppression system to collect the dust. The shaver cost \$10K for the unit and \$2K for each set of blades. The shaver can get within 2-3 inches of the wall and reached free release levels. The baseline unit was a five piston scabbler which cost \$7K. The shaver was estimated to remove concrete at a rate of 145 ft² per hour as compared to 27ft² per hour for the scabbler. In addition, there was only half as much waste to dispose of with the shaver.

The second technology described by Steve was the concrete grinder. The grinder tested was a handheld unit that cost \$600 dollars for the unit and \$60 per blade. This unit was used on the wall/floor area that had been left uncleaned after the concrete shaver was finished. The grinder was compared to two other devices: a single-piston scabbler and a scaler. The grinder was twice as fast as the other two devices and left the surface of the concrete very smooth. The grinder could go about 100 hours before the blade needed to be replaced.

The third technology presented was a concrete spaller that was used to remove large pieces of concrete wall. This technology was developed by PNNL and is a handheld device. Holes are drilled first and then large chunks of concrete are lifted off the wall. One advantage the spaller has over the other three devices examined was that the concrete could be removed to a greater depth, up to 2 inches. The device can also be used for hot spot removal. The hardened steel drill bit lasts for about 400 holes and not as much dust is produced as compared to the baseline technologies. Modifications to the spaller are still being made, including the addition of a vacuum system and a window-viewing port on the end of the device. The vacuum system being added is a centralized but mobile HEPA system. It is a high velocity unit with a back flushing mechanism.

BHI is also examining two methods of decontaminating lead bricks. One method is a physical one using dry blasting with Ni and Al and the other is a chemical decon method. There are 800 lead bricks to dispose of with the baseline technology being grouting and sending them to ERDF for burial. At the present time there is no chemical decon of floors, walls, etc. by BHI. For structural steel it is planned to use high pressure water. A line would be set up to run the steel beams through the decon process to reach free release levels.

David Encke talked about the planned work to be done at the 233-S Building. This building was a Pu concentration facility that was alpha contaminated due to a fire. The first step is to lock down or fix the contamination in place. One option being examined is aerosol fogging. They are also planning to crimp the pipes to seal them off. The concrete is not going to be decontaminated to free release levels. Worker protection suits are being looked at also. It was mentioned that Fernald has done fogging as part of their large-scale demo and may have pertinent data that could help in fixing the contamination. The idea of completely decontaminating the facility is not decided yet. One particularly problematic group of contaminated items are the glass and metal Rashig rings from the absorption columns. There has been no solution as to what to do with them.

PHMC Decontamination Work

Darryl Nelson, BWHC, talked about the efforts underway to clean-up PFP. There is a need to stabilize the Pu and then deactivate the facility. They are examining the option of going to a clean slab-on-grade rather than leaving the structure of the facility. There are more than 100 gloveboxes in PFP that need to be decontaminated. There is also an estimated 400kg of residual Pu to remove. They are still trying to determine how and what to do. A plan, due out at the end of February, is being put together to examine how to finish the job at PFP by the year 2006. There is a budget of \$200-300 million for PFP work. The current baseline is to deactivate the facility by 2014 and have the structure and vault area removed later (by 2028). The slab-on-grade concept would save S&M money in the future by removing all structures sooner. The final form of the Pu or where it would be sent is not decided yet. Wayne Green mentioned a method to strip Pu from gloveboxes that he saw at LANL. The method was just developed and uses plasma to do the decontamination.

Rich Hobart, BWHC, talked about the hot cell deactivation work in the 324 and 327 Buildings. There are still 4 million curies of Cs and Sr contamination left in the 324 B-cell to clean up. In addition, there is also CsCl contamination in 324 to take care of. In the 327 Building, fuel fines need to be cleaned up to get the facility to the rad facility level. The duct work, piping, pressure vessels, etc. will need to be physically or chemically decontaminated. Plasma torches and skill saws are being used for cutting now, but the laser cutter would be used if it is ready in time. Robin Duncan reported that work at LANL and the Bremerton Naval Shipyard is being examined to see how they utilize laser cutters. Robin is putting a plan together as to how the laser cutter will be used at Hanford. Sandia also has experience with use of laser cutters and robotics and should be contacted also.

PNNL Decontamination Work

Randy Thornhill gave a viewgraph presentation on PNNL's decontamination successes and challenges. Some of the successes he highlighted included the use of the Cerium IV decontamination process on hot cells in the 325 Building. In the 324 Building ultra-high pressure water spray was used to decon the hot cell airlock and CORPEX chemical decon was used on the manipulators. Three problems were mentioned by Randy: identification of "hot spots" that need to be decontaminated, remote application of decon technologies due to high rad fields, and the

disposition of primary and secondary waste streams after decon. Two challenges were also discussed by Randy in implementing new technologies on-site: the funding cycle differences between the research, EM-50, funding and the operating, cleanup funding and the need to involve the critical operating staff or users at the start of the technology research cycle. A discussion ensued about the use of CO₂ blasting technology at Hanford. There are two units purchased so far for T-Plant and the 222-S Building. There are still permit and code issues to be resolved with using the technology on-site. In order to really use CO₂ blasting on-site it will need to be made more mobile in order to move it from location to location.

Jim Buelt presented data on D&D technology deployments that PNNL has worked on or is working on now. A brochure describing these activities was also distributed. Some of the areas of research included: integrated D&D planning, rad characterization, surface decon, size reduction, and remote/robotic systems. Jim also mentioned that the Cerium IV technology was used at West Valley to decon canisters for reuse as well as its use in the 325 Building.

Miscellaneous Updates

Shannon Saget stated that the DDFA has announced four new large-scale demos. One at SRS on a fuel fab facility, one on gloveboxes at LANL, one at INEL for reactor buildings/basins, and one at Mound for a tritium facility. The Canyon Disposition Initiative that was submitted by Hanford will not be a large-scale demo, but will be funded this year and next. If anyone is interested in participating on the Integrated Contractor teams for the four large-scale demos, let Shannon or Jim Goodenough know.

Jim Goodenough mentioned that there is an EM-50 re-engineering effort getting underway. He sees this as a good sign to help the EM-50 program become more effective and to more quickly get new technology to the field. Jim mentioned the following as future agenda items for the D&D Subgroup meetings: a risk modeling/analysis discussion (this may be useful to the new Canyon Disposition Initiative), a capabilities presentation by SGN – Eurosys, results of the HQ EM-40/50 briefings, and an update on the Canyon Initiative.

D&D Subgroup Meeting Attendees – 2/10/98

Ron Borisch	BWHC	372-3382
Jim Buel	PNNL	375-4315
Robin Duncan	BWHC	373-2229
David Encke	CHI	373-3461
Sue Garrett	PNNL	372-4266
Jim Goodenough	DOE-ER	376-0893
Wayne Green	FDH	372-6533
Paul Griffin	BHI	373-3916
Rich Hobart	BWH	373-2316
Kim Koegler	BHI	372-9294
David Langstaff	DOE-RL/TPD	376-5580
Tina Masterson-Heggen	Ecology	736-5701
Mark R. Mitchell	PNNL	372-4069
Darryl Nelson	BWHC	373-2841
Stephen Pulsford	BHI	373-1769
Wade Riggsbee	YIN	946-0101
Shannon Saget	DOE	372-4029
Randy Thornhill	PNNL	376-6769
Steve Weakley	PNNL	372-4275
Detlev Wegener	FDH	373-2021